DOCUMENT RESUME

ED 167 704 CE 018 020

AUTHOR	Brown, Sylvia J.
TITLE	The Impact of Selected Undergraduate Experiences on Women's Career Choice.
INSTITUTION	Northeastern Univ., Boston, Mass. Center for Cooperative Education.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.; Wellesley Coll., Mass. Center for Research on Women.
PUB DATE	Jun 78
GRANT	G007602256
NOTE	29p.; Not available in hard copy due to broken type
AVAILABLE FROM	Cooperative Education Research Center, Northeastern University, Boston, Massachusetts 02115 ($3.00)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Career Choice; *Career Development; *College Graduates; College Majors; Comparative Statistics; *Cooperative Education; *Educational Background; Educational Research; Employment Patterns; *Females; Higher Education; Information Sources; Liberal Arts Majors; Occupational Choice; Occupational Information; Post Secondary Education; Undergraduate Study; Womens Education; Working Women

ABSTRACT

A comparative study was conducted of women college graduates of cooperative and noncooperative programs to explore and evaluate the impact of cooperative education on the career development of college women. A total of 629 women from twenty-three institutions (twelve with cooperative education programs and eleven without) responded to the mailed questionnaire. The study examined the relationship of change of major to career choice, the relationship of choice of undergraduate major to career choice, the influence of volunteer work experience, the impact of undergraduate work experience on career development, and the relationship between primary source of career information and subsequent career patterns. It was found that the majority of respondents who changed majors went from one traditional major to another; choice of undergraduate major was the most important factor in subsequent choice of traditional or nontraditional career paths; women who did volunteer work as undergraduates generally followed traditional career patterns; alumnae who had undergraduate job experiences related to their major perceived their career preparation more favorably than alumnae with unrelated work experiences; and women who said their co-op coordinator was their primary source of career information were most likely to report they received promotions and/or merit pay raises on their first job. It was concluded that cooperative education has a positive impact on the career development of women. (Statistical tables are included in the report, and a description of the sampling plan is appended.) (LMS)

ED167704

The Impact of Selected Undergraduate Experiences on Women's Career Choice

by
Sylvia J. Brown

Cooperative Education Research Center
Northeastern University
Boston, Massachusetts 02115
(617) 437-3784

June, 1978

CE 018 020

Copyright © 1978 by the Cooperative Education Research Center
Northeastern University, Boston, MA 02115
All Rights Reserved

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Sylvia J. Brown

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND THE ERIC SYSTEM CONTRACTORS."

CN001018

TABLE OF CONTENTS

PREFACE i

INTRODUCTION 1

RESEARCH GOALS 2

METHODOLOGY 3

RESEARCH FINDINGS 5

SUMMARY AND CONCLUSIONS 17

APPENDIX A - SAMPLING PLAN 20

PREFACE

The purpose of this report is to present the findings of a study of the impact of selected undergraduate experiences on the career choice of college women. It is hoped that these findings will be useful to those college personnel who are particularly interested in the career development of women.

This project was supported by a grant from the U.S. Office of Education (OEG 007602256) and a grant from the Center for Research on Women in Higher Education and the Professions at Wellesley College. I am grateful for this vital support, but wish to make it clear that the author takes responsibility for the substance of this report.

There are a number of people who have provided invaluable assistance in various phases of this project. Ani Sarkissian, Research Assistant for this project, conducted most of the computer runs and did a significant amount of the data anlysis. Her excellent work is greatly appreciated. Dr. James W. Wilson, Director of the Cooperative Education Research Center, has given me his usual valuable counsel. Two other staff members of the Research Center, Etsuko Kumai and Cynthia Jahn Whitten, have given numerous constructive suggestions throughout the project. A special thank you is owed to Donna Ciaccia for her patience and skill in the preparation of the final manuscript.

Finally, appreciation is extended to the Directors of Alumni/Alumnae Affairs and to the many alumnae who took time from their busy schedules to make this project possible. It is sincerely hoped that this report justifies their cooperation.

Northeastern University
Boston, Massachusetts

Sylvia J. Brown
June, 1978

I. INTRODUCTION

In spite of the growing interest in and efforts towards achieving equal rights for women, there is ample evidence to suggest that generally women are still working in the same occupations they have traditionally pursued and at the same wage levels.[1] As a matter of fact, the gap between salaries of men and women has increased in recent years.[2] Studies also show that college women of the late 1960's were still primarily choosing to study the fields of teaching and nursing.[3] These data suggest that the career patterns of women have not changed to any great extent in recent years.

A number of strategies have been proposed to expand career options for college women: (1) improve career counseling at the undergraduate level; (2) recruit young women into programs that prepare them for employment in a wider range of occupations and careers;[4] (3) provide greater opportunities for college women to have direct acquaintance with the "world of work".[5] Cooperative education addresses the latter suggestion by encouraging college women to have direct contact with the "world of work". It was the intent

---

[1]Elizabeth Waldman and Beverly J. McEaddy, "Where Women Work--An Analysis by Industry and Occupation". Monthly Labor Review, 1974, 97 (5), 3-13; U.S. Department of Labor, Employment Standards Administration, Women's Bureau, "The Earnings Gap Between Men and Women". (Washington, D.C.: Government Printing Office, 1976) pp. 1-3.

[2]U.S. Department of Labor, pp. 1-2, 11; Sylvia J. Brown, Cooperative Education and Career Development: A Comparative Study of Alumni, (Boston, Mass.: Cooperative Education Research Center, Northeastern University, 1976)

[3]Helen S. Astin and Ann S. Bisconti, Career Plans of College Graduates of 1965 and 1970. (Bethlehem, PA: The CPC Foundation, Report No. 2, 1973).

[4]Mary B. Kievit, Review and Synthesis of Research on Women in the World of Work. (Washington, D.C.: U.S. Government Printing Office, Information Service No. 56, 1972).

[5]Joseph Katz, Peggy Comstoch and Majorie M. Lozoff, Education and Occupational Aspirations of Adult Women. (Stanford, CA: Stanford University, Institute for the Study of Human Problems, 1970).

of this study to explore and evaluate the impact this form of education has had on the career development of college women.

In 1975 a study of college graduates from twenty-three higher education institutions was conducted by the Cooperative Education Research Center. The purpose of this study was to explore the relationship between student participation in cooperative education and career development. The research findings did, in fact, lead to the conclusion that participation in cooperative education increased undergraduate perceptions of career preparedness and did have an impact on characteristics of the first job after graduation. Of particular interest were specific outcomes found to be associated with a significant proportion of the women in the study who participated in cooperative education: they married later; they had children later; they pursued careers for longer periods of time before starting a family; and they were employed ten years after graduation in more non-traditional jobs than the non-cooperative education alumnae.

These findings were thought to have important implications for the higher education of women. If, for example, certain types of undergraduate work experience are found to be related to particular patterns of after graduation career and life experiences, this information might be used in planning undergraduate programs for college women. Of special importance would be the discovery of aspects of undergraduate cooperative education that seem to open up career options for women. It was thus the intent of this study to explore in more detail those aspects of the undergraduate experience that the earlier research showed to have impact on the career development of women.

II. RESEARCH GOALS

There were five research questions posed at the beginning of this study:

1. Does a woman's change of major as an undergraduate reflect a movement away from or toward a non-traditional career choice?

2. In what way do undergraduate majors relate to later job choice?

3. How does participation in volunteer work experience as an undergraduate, as compared to paid work experience, influence the degree of career preparedness and overall career patterns of women?

4. What is the impact of undergraduate work experience that is related to the student's major, as opposed to unrelated experiences, on career choice?

5. What, if any, is the relationship between the primary source of career information as an undergraduate and subsequent career patterns?

III. METHODOLOGY

Sample

The women who participated in the study were graduates of the classes of 1965, 1970 or 1974. There were alumnae responses from twenty-three different institutions, twelve of which had mandatory cooperative education programs and eleven which did not have co-op at all. Although only half the institutions in the research sample were liberal arts institutions, it is interesting to note that approximately 62 percent of the women respondents were liberal arts majors. A total of 629 women responded to the questionnaire and the following analyses are based on their responses. (A more detailed presentation of the sample was included in the original study of graduates and may be found here as Appendix A).

Data Analysis

In order to determine whether a woman's undergraduate change of major reflected a movement away from or toward a non-traditional career choice, a classification scheme of majors and jobs was required. Table 1 shows how jobs and majors were classified as traditional or non-traditional, using

a scheme suggested in a United States Department of Labor publication.[6] This classification system was used in the analysis of data for questions one and for questions two and three as well.

TABLE 1
Classifications of Undergraduate Majors and Occupations

Traditional Majors	Non-traditional Majors
Nursing	Liberal Arts Science (i.e., Math, Biology, Chemistry, Physics)
Education	Business (i.e., Management, Accounting)
Liberal Arts Social Sciences and Humanities (i.e., Languages, English, Sociology, Psychology)	Engineering
Secretarial Science	
Home Economics	
Allied Health (i.e., Physical Therapy, X-ray Technology)	

Traditional Occupations	Non-traditional Occupations
Health Professionals (except doctors)	Doctors
Teachers	Accountants
Librarians	Scientists
Public Advisors	College professors
Secretaries	Engineers
Clerical Workers	Technicians
Sales Workers	Lawyers
	Managers
	Foremen, Operators, Laborers, Farm Workers

To respond to the second research question, each questionnaire was analyzed in order to determine how the alumna's job choice related to her major. Using the Dictionary of Occupational Titles, judgements were made by the project director that the job was either closely related, somewhat related, or not related at all.

For the last three questions, all the data necessary to respond to these questions were available on computer file. Data were analyzed by

[6] Dixie Sommers, "Occupational Rankings for Men and Women by Earning", in Monthly Labor Review, Reprint 2988, August, 1974.

means of the Statistical Package for the Social Sciences program for cross tabulation.[7] Significance tests were conducted using the Chi-square statistic.

IV. RESEARCH FINDINGS

The first question was "Does a women's change of major as an undergraduate reflect a movement away from or toward a non-traditional career choice?" The result for the total group of women showed that the majority of respondents who changed majors (65%) went from one traditional major to another. The data of Table 2 show that a greater proportion of co-op women changed from one traditional major to another than did the non-co-op women, whereas, a greater proportion of non-co-op women participated in the other three types of major changes. The main point to be made, however, is that only a small number of alumnae changed from a traditionally female-dominated major to a major that has traditionally been chosen by males.

TABLE 2
Direction of Change of Major

	Traditional to Traditional	Non-traditional to Non-traditional	Traditional to Non-traditional	Non-traditional to Traditional
Co-op	66 (79%)	2 (2%)	6 (7%)	10 (12%)
Non-co-op	34 (49)	9 (13)	10 (14)	17 (24)
Total	100 (65)	11 (7)	16 (10)	27 (18)

Graduates were asked to indicate their reasons for changing majors. The reason most commonly given by both co-op and non-co-op women was simply that their interests changed. However, one-third of the alumnae did explain their

[7]Norman H. Nie, et. al., Statistical Package for the Social Sciences, Second Edition. (New York: McGraw-Hill Book Company, 1975)

decision to change majors in terms of their future work plans. The following quotes are representative: "I wanted to learn something and still have a chance for employment", "Field experience showed I was not cut out for Nursing", "I wanted a more people-centered job", and "So I could have a profession as soon as I graduated". It is interesting to note that ten percent more of the co-op graduates cited career-related reasons for changing majors, as compared to non-co-ops. Other reasons for changes mentioned by the respondents were poor grades, dissatisfaction with the faculty or department, and a variety of individual personal reasons.

Consistent with the above findings as to reasons for change of major, a higher proportion of the co-op women changed majors as undergraduates than did the non-co-op women. This is not surprising when one considers some findings from previous research studies of cooperative education which have shown that many students use co-op to test and explore their career choices.[8] Researchers have also found that co-op students perceive greater personal changes since entering college, particularly in the area of career development.[9] Hence, it is reasonable to hypothesize that co-op experiences lead to greater understanding of what is involved in one's major and, hence, a greater potential for dissatisfaction and a desire for change.

The second research question was "How does the undergraduate major relate to later job choice?" The findings confirm that women who major

---

[8]Sylvia J. Brown, Cooperative Education and Career Development: A Comparative Study of Alumni. (Boston, MA: Cooperative Education Research Center, Northeastern University, 1976); James W. Wilson et. al., Implementation of Cooperative Education Programs. (Boston, MA: Cooperative Education Research Center, Northeastern University, 1974).

[9]James W. Wilson, Impact of Cooperative Education Upon Personal Development and Growth of Values. (Boston, MA: Cooperative Education Research Center, Northeastern University, 1974).

in liberal arts, both co-op and non-co-op, are considerably less likely to find a job after graduation that is related to their undergraduate major than women who majored in other fields. An examination of the percentages in Table 3 indicates that a greater proportion of those liberal arts non-science co-op women who chose traditional jobs, secure jobs that are closely related to their academic major than do their non-co-op counterparts.

TABLE 3
Relationship of Undergraduate Major to First Job

	First Traditional Job			First Job Non-traditional		
	Not Related	Somewhat Related	Closely Related	Not Related	Somewhat Related	Closely Related
Liberal Arts, Non-Science						
Co-op	59 (57%)	25 (24%)	19 (18%)	8 (73%)	2 (18%)	1 (9%
Non-co-op	69 (67)	27 (27)	6 (6)	8 (50)	3 (19)	5 (31
Liberal Arts, Science						
Co-op	5 (31)	1 (6)	10 (63)	2 (13)	3 (19)	11 (69
Non-co-op	5 (23)	4 (18)	13 (59)	2 (25)	1 (13)	5 (63
Business						
Co-op	-	4 (21)	15 (79)	-	1 (17)	5 (83
Non-co-op	2 (29)	1 (14)	4 (57)	-	2 (14)	12 (86
Education						
Co-op	6 (13)	9 (20)	30 (67)	3 (60)	1 (20)	1 (20
Non-co-op	7 (16)	5 (11)	33 (73)	2 (100)	-	-
Health Sciences						
Co-op	-	-	23 (100)	-	-	-
Non-co-op	2 (3)	3 (5)	56 (92)	-	-	-

The Chi-square statistic comparing co-op and non-co-op on this difference is significant. Hence, there is some evidence to suggest that co-op alumnae who major in the humanities and social sciences and who pursue a traditional career, such as social worker, may succeed in finding a relevant job more often than their non-co-op counterparts. This pattern appears to be stable over time since the proportions do not change greatly in the data for women's most recent job status. (See Table 4).

TABLE 4
Relationship of Undergraduate Major to Current Job

	Current Job Traditional			Current Job Non-traditional		
	Not Related	Somewhat Related	Closely Related	Not Related	Somewhat Related	Closely Related
iberal Arts, Non-Science						
Co-op	33 (51%)	18 (28%)	14 (22%)	12 (63%)	4 (21%)	3 (16%
Non-co-op	29 (54)	20 (37)	5 (9)	11 (69)	3 (19)	2 (12
iberal Arts, Science						
Co-op	6 (55)	1 (9)	4 (36)	3 (23)	1 (8)	9 (69
Non-co-op	2 (18)	2 (18)	7 (64)	3 (30)	1 (10)	6 (60
usiness						
Co-op	1 (7)	3 (21)	10 (71)	-	1 (20)	4 (80
Non-co-op	-	2 (40)	3 (60)	-	2 (17)	10 (83
ducation						
Co-op	6 (16)	1 (3)	30 (81)	1 (33)	1 (33)	1 (33
Non-co-op	2 (6)	4 (11)	29 (83)	3 (100)	-	-
ealth Sciences						
Co-op	-	-	16 (100)	-	-	-
Non-co-op	-	-	39 (100)	-	-	-

On the other hand, a greater proportion of non-co-op women who major in the humanities or social sciences and who choose a non-traditional first job succeed in finding jobs closely related to their undergraduate major. However, this difference is not statistically reliable and, as Table 4 shows, does not persist over time. Overall, those alumnae who major in the humanities or social sciences and who work in non-traditional occupations are in jobs that do not relate at all to their undergraduate field of study.

The samples of science and business majors are too small to establish any reliable differences between co-op and non-co-op alumnae. Generally, women who major in either of these fields are considerably more likely to obtain jobs that relate closely to their major. This is true for both women in traditional and non-traditional occupations. It is interesting to note that science and business majors are approximately equally likely to

pursue non-traditional or traditional careers. In contrast, alumnae who major in such traditional fields as education, or health sciences almost invariably find jobs related to their studies and follow very traditional career paths.

Further analysis of the data in Table 4 reveals that 48 percent of the non-co-op women currently working in non-traditional occupations held traditional first jobs. Only 33 percent of the co-ops presently employed in non-traditional fields were originally in traditional occupations. These data indicate that women who participate in cooperative education are more likely to choose non-traditional occupations upon graduation from college. A greater number of non-co-op women, on the other hand, first select traditional jobs and then after a period of time change to non-traditional occupations. Since there is an approximately equal distribution of co-op and non-co-op women among various undergraduate majors, there must be another reason for the above findings. A reasonable hypothesis is that work experiences, either as a cooperative education student or an employee after graduation, influences some women to choose non-traditional jobs.

To summarize, the findings of this analysis are: choice of major as an undergraduate is a most important factor in subsequent choice of traditional or non-traditional career paths; except for humanities or social science majors, most alumnae find jobs that are closely related to their undergraduate major; participation in cooperative education has some impact on whether or not a humanities or social science major is able to find a job related to her major after graduation; participation in cooperative education has some influence on whether alumnae pursue non-traditional or traditional occupations upon graduation from college.

The second major goal of this project was to analyze the relationship between characteristics of undergraduate work experiences of women and

alumnae career development. In particular, the relationship between alumnae career patterns and each of the following variables was examined: (1) whether undergraduate work was paid or done on a volunteer basis; (2) whether the work was related to the academic major or not; (3) whether a placement coordinator, faculty person or person on the job site was the main source of career information.

The type of work experiences that generally fell into the "paid" category were cooperative education, part-time jobs, summer jobs, and College Work-Study jobs. "Volunteer" jobs included internships, field periods, and occasionally, co-op jobs. "Related" jobs were most likely to be cooperative education, field periods or internships; whereas "non-related" jobs were summer, part-time or College Work-Study jobs. The findings show that the non-co-ops who were paid - hence, the women who had part-time, summer, or College Work-Study jobs - were also the women with the fewest related work experiences. In addition, paid non-co-ops were most likely to respond to the question, "In what ways, if any, did your work experience in college affect your choice of job after graduation?" that their work experience had no effect at all.

The comparison between paid and volunteer alumnae shows that, as a whole, women with volunteer jobs tend to be more traditional in their choice of major and postgraduate patterns than those women who were paid for their work experience. For instance, over 80 percent of the "volunteer" women majored in education, liberal arts non-science, or nursing. In education and nursing they held internship positions that were generally related to their course work and found jobs after graduation in their chosen field.

Although women who had volunteer experiences, especially nursing and education majors, had the advantage of almost invariably finding jobs in

TABLE 5
Characteristics of Women With Paid Undergraduate Work Experience and Volunteer Undergraduate Work Experience

	Paid		Volunteer	
	Co-op	Non-co-op	Co-op	Non-co-op
Undergraduate Major				
Liberal Arts, Non-Science	122 (55%)	129 (49%)	33 (57%)	9 (36%)
Liberal Arts, Science	26 (12)	41 (15)	-	4 (16)
Business	18 (8)	18 (7)	-	1 (4)
Education	29 (13)	32 (12)	16 (28)	8 (32)
Nursing	16 (7)	31 (12)	7 (12)	3 (12)
Other	14 (5)	14 (5)	2 (3)	-
	X^2 = 12.527 P > .05		X^2 = 14.087	P < .05
Relation of Major to Undergraduate Work				
All work related	36 (16)	27 (10)	3 (5)	2 (8)
Most work related	66 (30)	37 (14)	22 (38)	11 (44)
Some work related	53 (24)	56 (21)	27 (47)	10 (40)
Little or no work related	69 (31)	146 (55)	6 (10)	2 (8)
	X^2 = 40.156 P = .0000		X^2 = .820	P > .05
Salary Level-Current Job				
$ 5,999 & below	26 (18)	16 (10)	11 (33)	1 (11)
$ 6,000 - $7,999	15 (10)	20 (12)	5 (15)	2 (22)
$ 8,000 - $9,999	34 (23)	31 (19)	8 (24)	2 (22)
$10,000 - $11,999	27 (18)	40 (25)	4 (12)	1 (11)
$12,000 - $13,999	18 (12)	22 (14)	3 (9)	-
$14,000 & above	27 (19)	33 (20)	2 (6)	3 (33)
	X^2 = 6.030 P > .05		X^2 = 6.689	P > .05
Type of Current Employer				
Large private firm	23 (19)	19 (16)	2 (7)	-
Small private firm	13 (11)	13 (11)	4 (14)	-
Self employed	14 (12)	7 (6)	4 (14)	1 (14)
Government	19 (16)	23 (19)	4 (14)	2 (29)
Social agency	30 (25)	49 (41)	9 (32)	4 (57)
Military	3 (3)	2 (2)	1 (4)	-
Farm	1 (1)	-	-	-
Other	17 (14)	6 (5)	4 (14)	-
	X^2 = 14.122 P < .05		X^2 = 4.359	P > .05
Homemaker After Graduation				
Yes	84 (39)	137 (55)	26 (48)	15 (60)
No	130 (61)	114 (45)	28 (52)	10 (40)
	X^2 = 10.278 P < .02		X^2 = .545	P > .05

TABLE 5 (continued)

	Paid		Volunteer	
	Co-op	Non-co-op	Co-op	Non-co-op
Have Children				
Yes	50 (23%)	96 (38%)	19 (33%)	9 (36%)
No	169 (77)	160 (62)	38 (67)	16 (64)
	X^2 = 11.251 P < .007		X^2 = .000 P > .05	

their field after graduation, they earned lower salaries than other alumnae. Looking at the data on current job status, (Table 5), one can see that about 75 percent of the women who were paid for their undergraduate work experience report their most recent salary as over $8,000 a year as compared to only 60 percent of the women with non-paid jobs. These salary levels are related to the type of employers women had after graduation: a greater proportion of non-paid women worked for social agencies (45 percent) than did paid women (33 percent). All of these results are consistent with the employment patterns women have traditionally followed.

In addition, the data presented in Table 5 show that a greater proportion of women with non-paid undergraduate experience become homemakers after college (54 percent) than do women with paid work experience (47 percent). For women who have had cooperative education experiences, a higher proportion of those who have had volunteer co-op jobs reported they have children (33 percent) than those who had paid co-op jobs (23 percent). These findings support the notion that more women who have had non-paid undergraduate work experiences in traditionally female occupations continue to follow traditionally female patterns after graduation, both in their employment and in their personal lives.

The next research question that was studied was whether there was a differential impact on women's career paths depending upon whether or not her undergraduate job related to her major. Over 60 percent of the women who had undergraduate jobs that were not related to their major were in the social and behavorial sciences or the humanities. As data presented earlier demonstrate, women in these majors had the most difficulty in finding related jobs after graduation as well. However, it is noteworthy that reliably fewer co-ops in the social and behavioral sciences and humanities had unrelated undergraduate jobs than did the non-co-ops. (See Table 6). This finding is also consistent with the data presented previously in Table 3 which show that fewer co-ops in the liberal arts non-science majors had unrelated jobs after graduation. These data provide evidence to suggest that participation in cooperative education may benefit those women in the humanities or social sciences who seek work experiences that relate to their field of study.

Generally women who had undergraduate work experiences that did not relate to their majors were not particularly satisfied with their career preparation. Thirty-seven percent of the co-op alumnae and sixty percent of the non-co-op alumnae who reported unrelated experiences also said their work experience had little or no effect on their choice of job after graduation. In contrast, of those alumnae who had work experiences that related to their major, only 13 percent of the co-ops and 24 percent of the non-co-ops reported their work experience had little or no effect on their choice of job after college. This represents the sizeable difference of about 25 percentage points. A greater proportion of women with unrelated experiences reported inadequate career preparation (44 percent) than those with related work (21 percent). In addition, as the data in Table 6 show, those women with

TABLE 6
Characteristics of Women With Related and Unrelated Undergraduate Work Experience

	Related		Unrelated	
	Co-op	Non-co-op	Co-op	Non-co-op
Undergraduate Major				
Liberal Arts, Non-Science	57 (43%)	14 (17%)	57 (75%)	96 (62%)
Liberal Arts, Science	16 (12)	17 (21)	2 (3)	17 (11)
Business	14 (11)	8 (10)	2 (3)	9 (6)
Education	23 (17)	14 (17)	7 (9)	18 (12)
Nursing	9 (7)	23 (28)	6 (8)	7 (5)
Other	12 (10)	5 (7)	2 (3)	7 (5)
	$X^2 = 31.288$ P = .0001		$X^2 = 9.349$ P > .05	
Effect of Work Experience				
Little or none	17 (13)	17 (24)	26 (37)	85 (60)
Confirm or change career	51 (40)	31 (44)	15 (21)	23 (16)
Learn about jobs	21 (16)	5 (7)	11 (16)	13 (9)
Co-op became full-time job	15 (12)	7 (10)	5 (7)	4 (28)
Help find full-time job	5 (4)	4 (6)	6 (9)	5 (4)
Increase skills	13 (10)	6 (9)	3 (4)	7 (5)
Increase self-knowledge	3 (2)	-	-	4 (3)
Other	3 (2)	-	4 (6)	1 (1)
	$X^2 = 15.956$ P < .05		$X^2 = 19.170$ P < .02	
Completeness of Career Information				
Adequate	67 (51)	47 (58)	21 (28)	35 (23)
Somewhat adequate	41 (31)	15 (19)	21 (28)	50 (33)
Inadequate	23 (18)	19 (24)	34 (45)	67 (44)
	$X^2 = 4.414$ P > .05		$X^2 = .893$ P > .05	
How Well Informed About Jobs				
Very well informed	31 (24)	19 (24)	11 (15)	12 (8)
Fairly well informed	47 (36)	37 (46)	17 (23)	42 (28)
Not too well informed	33 (26)	14 (18)	19 (25)	61 (41)
Very poorly informed	18 (14)	10 (13)	28 (37)	33 (22)
	$X^2 = 2.697$ P > .05		$X^2 = 10.303$ P < .02	

unrelated work experience as undergraduates reported more frequently than other alumnae that they were poorly informed about job opportunities after graduation. Hence, it is reasonable to conclude that alumnae who have undergraduate work experiences that relate to their major perceive their career preparation more favorably than do alumnae with unrelated experiences.

The last question that was examined was whether there is a relationship between the primary source of an undergraduate's career information and her career development. The primary source of undergraduate career information for the co-op alumna was either her co-op coordinator or the people at her place of employment; whereas, the teaching faculty served as the primary source of career information for the non-co-op alumna. The faculty were especially important for those non-co-ops who majored in nursing and who participated in internship experiences.

The data indicate that there is a relationship between the primary source of an undergraduate's career information and her perceptions of the adequacy of her career preparation. As the data in Table 7 demonstrate, those individuals who reported that their career information was largely received from other people on the job site also reported receiving inadequate career information more frequently than other alumnae and were least likely to report receiving excellent preparation for their first job. Similarly, 28 percent of the women receiving career information from their co-op, field or internship placement coordinators said they felt very well-informed about post-graduation job opportunities; about 20 percent of alumnae who received career information from teaching faculty reported they were very well informed; only ten percent of the co-ops and three percent of the non-co-ops who received their career information from other people on their job sites reported they were very well informed about job opportunities after graduation.

An examination of the data on post-graduation activities reveals some differences among co-op and non-co-op alumnae. Of the women who worked full-time after graduation, over 50 percent of those who received their undergraduate career information from their co-op coordinator received at least one promotion on their first job as compared to an

TABLE 7
Sources of Undergraduate Career Information
and Career Patterns of Alumnae

	Faculty		People on Job		Coordinator	
	Co-op	Non-co-op	Co-op	Non-co-op	Co-op	Non-co-op
Completeness of Career Information						
Adequate	53 (50%)	63 (43%)	18 (31%)	12 (33%)	25 (51%)	6 (54%)
Somewhat Adequate	35 (33)	50 (35)	18 (31)	8 (22)	15 (31)	1 (9)
Inadequate	19 (18)	32 (22)	22 (38)	16 (44)	9 (18)	4 (36)
	X^2 = 1.118 P > .05		X^2 = .893 P > .05		X^2 = 2.925 P > .05	
Extent Prepared for Job						
Excellent	33 (37)	38 (29)	10 (20)	9 (25)	19 (42)	3 (27)
Adequate	43 (48)	76 (58)	30 (60)	24 (67)	21 (47)	7 (64)
Inadequate	14 (15)	17 (13)	10 (20)	3 (8)	5 (11)	1 (9)
	X^2 = 2.265 P > .05		X^2 = 2.270 P > .05		X^2 = 1.046 P > .05	
Information About Job Opportunities						
Very well informed	26 (24)	22 (15)	6 (10)	1 (3)	14 (29)	3 (27)
Fairly well informed	40 (37)	68 (46)	18 (31)	17 (49)	15 (31)	2 (18)
Not too well informed	24 (22)	35 (24)	23 (40)	10 (29)	11 (23)	5 (46)
Very poorly informed	17 (16)	22 (15)	11 (19)	7 (20)	8 (17)	1 (9)
	X^2 = 4.087 P > .05		X^2 = 4.177 P > .05		X^2 = 2.555 P > .05	
Promotions on First Job						
Yes	27 (30)	40 (30)	12 (24)	12 (34)	22 (51)	4 (36)
No	62 (68)	92 (69)	38 (76)	23 (66)	21 (49)	7 (64)
	X^2 = .021 P > .05		X^2 = .627 P > .05		X^2 = .768 P > .05	
Merit Raises on First Job						
Yes	38 (43)	48 (36)	20 (40)	18 (49)	26 (61)	6 (55)
No	51 (57)	84 (64)	30 (60)	19 (51)	17 (39)	5 (45)
	X^2 = .650 P > .05		X^2 = .343 P > .05		X^2 = .127 P > .05	

average of 33 percent for all other alumnae. Sixty-one percent of women who received career information from co-op coordinators reported receiving at least one merit raise on their first job. Again, this percentage is lower for all other alumnae.

The findings based on the data in Table 7 and reported above suggest two conclusions. First, providing undergraduates with a work experience in and of itself will not lead to greater understanding of and knowledge about careers. Women who perceived the people they worked with and for as their prime source of career information were more dissatisfied than those who received their career information from either teaching faculty or placement coordinators. The implication is clear: an undergraduate work experience should be carefully guided and monitored by a member of the college staff if students are to fully benefit from participation in that work experience.

A second conclusion is suggested by the data on post-graduation promotions and merit raises. Those women who reported receiving career information from their co-op coordinators seem to be more successful than the other women in obtaining promotions and/or raises on their first job. Although sufficient data is not available to explain these findings, they do point to an interesting trend that could be explored in future research projects.

V. Summary and Conclusions

The findings of this research are summarized below:

1. Most women who changed majors as undergraduates changed from one traditionally-female dominated major to another.

2. The reason given most frequently for changing majors is that a person's interests changed. One-third of the study respondents did

change to majors that they hoped would be more compatible with their career plans. A greater proportion of women who participated in cooperative education reported career-related reasons for changing majors than did women who did not have cooperative education experiences.

3. A greater proportion of women in cooperative education programs changed undergraduate majors than did non-co-ops.

4. Women who majored in the social and behavorial sciences or the humanities were more likely to find themselves employed both during and after college in jobs that were unrelated to their college major than women in any other majors. Co-op alumnae in these majors succeeded in finding relevant jobs both during and after college more frequently than their non-co-op counterparts.

5. Considering the variables examined in this research, the prime determinant of whether a woman pursues a traditional or non-traditional career path is her choice of undergraduate college major. Women who majored in the sciences or business were most apt to choose a non-traditional career. Participation in cooperative education also influences some women to choose non-traditional careers.

6. Women who worked in non-paid jobs as undergraduates were generally those who followed traditional career patterns during and after college.

7. Alumnae who had undergraduate job experiences that related to their major perceived their career preparation more favorably than alumnae with unrelated experiences.

8. Women who received their career information primarily from people on their job site were more dissatisfied with their career information than women who received information from teaching faculty or from co-op, internship or field placement coordinators.

9. Women who said their co-op coordinator was their primary source of career information were most likely to report they received promotions and/or merit pay raises on their first job.

Given these findings, the following conclusions may be drawn. Choice of undergraduate major is a most important factor in a woman's career development. The decision to major in a particular field impacts upon the characteristics of one's undergraduate work experience, including cooperative education, as well as the career patterns followed thereafter. However, given that cooperative education positions are almost invariably paid jobs that relate to the undergraduate major, there are particular benefits, noted above, that accrue to women who participate in cooperative education programs. These benefits occur in varying degrees for women in all majors. Hence, the conclusion that is drawn as a result of this research is that providing work experience for college women, particularly cooperative education, does have a positive impact on the career development of women.

APPENDIX A

SAMPLING PLAN

Once the research goals had been formulated, the next step was to design a plan to achieve those goals. It was decided that a comparative study of alumni of cooperative and non-cooperative programs, using a mailed questionnaire, would be the best method of obtaining the data. If the undergraduate institutions of these alumni were similar in most respects, then one could assume with some confidence that any significant differences in alumni responses to the questionnaire related to participation in cooperative education. Thus, the criteria for inclusion in the research sample was quite important and shall now be explained.

Sample Selection

There were a number of criteria used in the selection of the institutions whose alumni participated in this study. At this stage of the sampling, only cooperative education institutions were being selected.[9] Once these institutions had been selected and had agreed to participate in the study, the comparative non-cooperative institutions were chosen.

One of the goals of this research effort was to determine whether the effects of cooperative education lasted over a period of time. It was therefore decided to do a cross-sectional sample of alumni one, five, and ten years after their graduation from college. Since the study was begun in 1975, this meant sampling alumni from the classes of 1974, 1970, and 1965. Thus, the first criterion established was that the cooperative

---

[9]The term "cooperative education", for the purposes of this study, included field experience programs in which the field work is considered an integral part of all students' curriculum.

education program must have been functioning for at least 12 years for a two year institution and 14 or 15 years for a four or five year institution. This was necessary in order to have graduated alumni with cooperative education experience from the class of 1965. The computer file of data maintained by the Cooperative Education Research Center was utilized to obtain a listing of institutions with cooperative education programs implemented prior to 1965. A total of 90 institutions met this requirement.

In order to have an approximately equal sample of cooperative education and non-cooperative education graduates, only colleges with mandatory cooperative programs were included. The rationale for this decision was that optional programs would almost certainly have an unequal distribution of cooperative and non-cooperative graduates. Thus, if only mandatory programs were chosen, all alumni would have had cooperative education and a non-cooperative education sample of equal size could then be taken from comparable institutions which did not have a cooperative program. Using this second criterion, the number of cooperative education institutions eligible for participation in the alumni study was reduced to 21.

A few of these 21 colleges were eliminated because their programs were tied in with one particular industry and would not be representative of the majority of cooperative education programs in this country today. A few more were excluded because, although they have had viable programs for more than 12 years, their programs were so small that the number of alumni available to fill out questionnaires would be minimal. The final number of cooperative education institutions selected for participation in the alumni study was twelve.

The next stage of the research design was to ask the twelve institutions that had been selected if they would agree to participate in the

study. After consulting with an alumni officer at Northeastern University, it was agreed that the President of the twelve institutions should be contacted by letter by Northeastern University's President. (A copy of the letter sent to the colleges is attached as Appendix A). The intention of the letter was to explain the purpose of the study and the planned research design, and to suggest a liaison person, usually the Director of Alumni Affairs, to work with the Research Center on this project. The letters to the cooperative education institutions were sent out in the Spring and Summer of 1975. Only one of the institutions declined to participate. A substitute institution was chosen and agreed to participate.

Once the cooperative education institutions were designated, a comparable group of non-cooperative institutions were selected and contacted. Three declined to participate and three substitute samples were found. An attempt was made to find institutions comparable in size, location, control (either public or private), academic majors offered, characteristics of the student body, and competitiveness of admission. The chart, included as Appendix B, demonstrates that the sample institutions chosen were indeed comparable in almost all of these aspects.

The next stage of the research design was to contact the liaison person at each institution in order to make the specific arrangements for the study. Ideally, it was hoped that each institution could provide two sets of mailing labels, one for mailing the questionnaire and one for a follow-up postcard, for all alumni from the classes of 1965, 1970, and 1974. In some instances, however, the institutions could provide only typed lists.

In order to ensure a large enough sample, it was decided to take, wherever possible, a random sample of 60 alumni from each class, for a

total of 180 from each institution. This would have resulted in a sample of 4320 which, with an estimated response rate of 33%, would have provided data from 1426 alumni.

Actually, the sampling technique was somewhat more complex. For those institutions whose mandatory cooperative education programs existed in two or three curricula, such as in engineering and business, a stratified random sample was taken; that is, 30 alumni from each of the two programs were chosen rather than 60 alumni from both programs together. The reason for stratifying the sample in this fashion was to be sure that the various majors were as well represented as possible in the final sample. In choosing samples from liberal arts programs with students in many majors or from universities which offered cooperative education in more than three majors, a strictly random sample of 60 alumni from each class was selected.

Because the samples were randomly selected, it was important to determine whether the samples selected were, in fact, representative of the population from which they were drawn. Thus, for each sample chosen, the gender and major of each alumnus were recorded. The same information was recorded for the population from which the sample was drawn. As the table in Appendix C demonstrates, the stratification of the sample resulted in a sample which was not exactly representative of the population from which it was drawn. Females were over-represented as were liberal arts majors while males and all other majors were under-represented. In all cases, however, the difference between representation in the sample and population was less than ten percent. In addition, the over-representation resulted in a greater number of females and liberal arts majors, which were two groups this research was particularly interested in studying.